

AGRICULTURAL NEWS LETTER

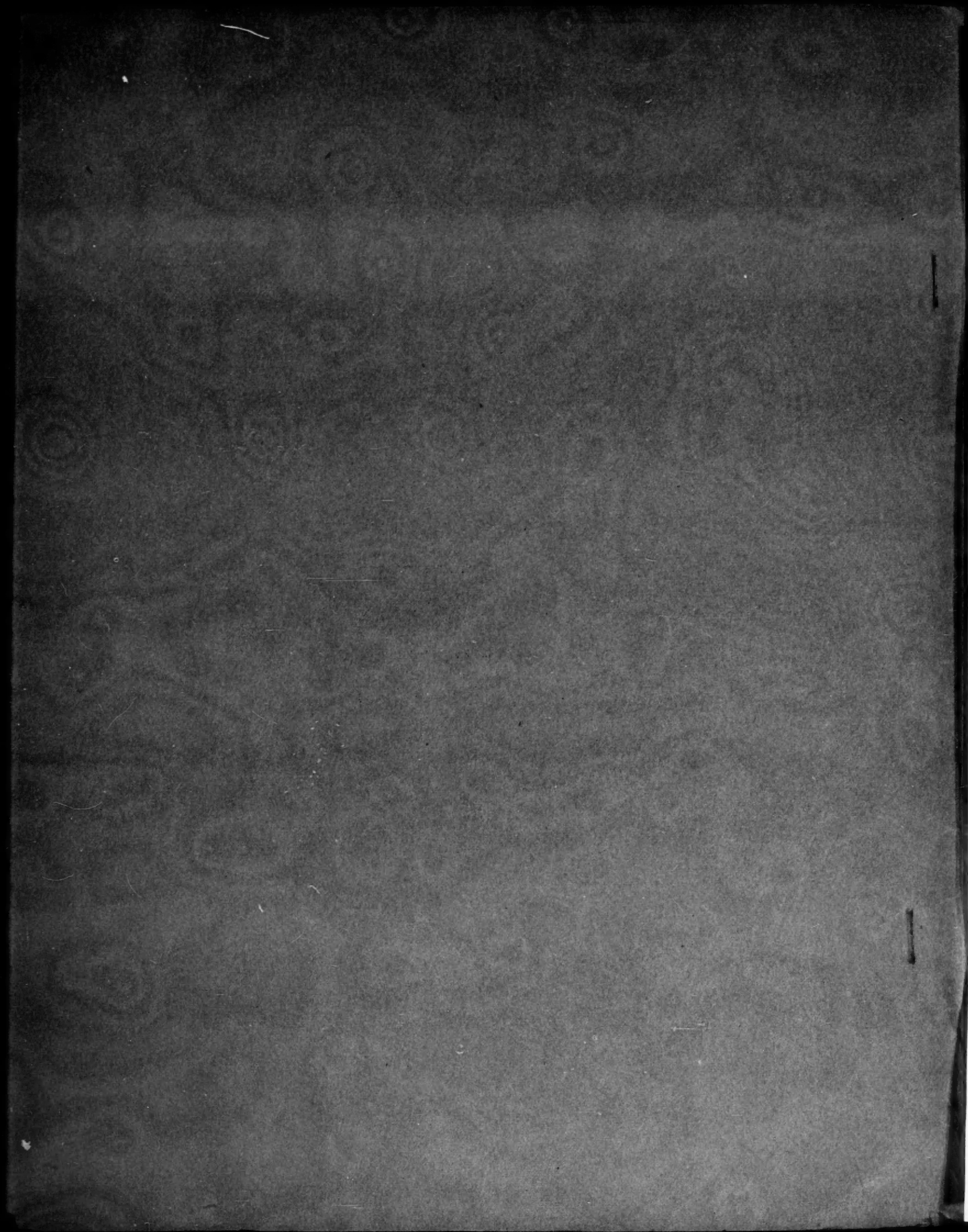
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This publication contains information regarding new developments of interest to agriculture based on laboratory and field investigations by the Du Pont Company. It also contains published reports of investigators at agricultural experiment stations and other institutions as related to the Company's products and other subjects of agricultural interest.



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DU PONT COMPANY OPERATIONS REACHED PEACETIME PEAK IN 1947

Operations of E. I. du Pont de Nemours & Company for the year 1947 reached the highest level of peacetime production in the company's 146-year history.

In its annual report, recently distributed to 91,200 stockholders, Du Pont disclosed a volume of operating activity approximately 17 per cent above the previous peacetime record, established in 1946.

Nylon, cellophane and pigments reached unprecedented sales levels, made possible, the report said, as a result of new manufacturing capacities and improved methods. Peak sales were achieved also in finishes for automobiles and household equipment, and explosives sales were favorably affected by increased demands from the coal and metal mining industries. Employment increased slightly over 1946 and totaled 75,945 at the close of the year, largest peacetime enrollment on record.

Sales Advance 21 Per Cent

Total sales for the year were \$783,400,000, or 21 per cent over last year. Overall operating activity, including sales to customers, products manufactured for other companies under service agreements, and a small quantity of materials produced in government owned plants, totaled \$827,400,000. In 1946, this total was \$709,300,000.

Earnings applicable to each share of common stock for 1947, as announced February 16, were equivalent to \$9.88, as against \$9.44 the previous year. The report revealed that the company's net earnings from operations of \$98,891,000, after taxes, represented a return of 9.7 per cent on the total operating investment. Although net earnings from operations were up 19 per cent over 1946, the increase in operating investment from \$891,800,000 to \$1,015,800,000 resulted in a net gain in return on investment of only three-tenths-of-one per cent.

Non-operating revenue, including dividends from the company's investment in General Motors Corporation, was \$37,719,000 after taxes. Non-operating income in 1946 was \$28,658,000. Dividends paid in 1947 totaled \$8.00 a share on the common stock, as compared to \$7.00 in 1946.

Price Record Cited

Sales price adjustments made toward the end of 1946 and during 1947 have resulted in an average overall increase of 15 per cent above the pre-war average of 1939, despite "substantial and continuing" advances in costs. Between 1939 and 1946, on the average, there had been virtually no change in the index of the company's sales prices. The increase in U. S. Bureau of

Continued on next page

Labor Statistics' national wholesale price index since 1939 was 97 per cent. The increase in costs of the principal raw materials purchased by the company was given as 113 per cent since 1939 and the advance in average hourly wages paid employees as 79 per cent.

The report is signed by Walter S. Carpenter, Jr., who was elected chairman of the board on January 19, 1948, at which time he relinquished his previous position as president.

58% of Sales In New Products

New products, introduced or substantially developed in the past twenty years, accounted for some 58 per cent of the company's sales volume in 1947. Production and sales of this group of products are now "directly giving employment to approximately 33,700 workers" as well as to many hundreds in related functions.

The investment in facilities and in working capital provided for the manufacture of these products is given as \$460,200,000, an increase since 1928 of 581 per cent. The composite, or weighted, average reduction in sales prices of the products from 1928, or from the time of introduction, has been approximately 55 per cent.

Commenting on prices, Mr. Carpenter observed that "one of the most vital and perplexing problems facing industry today is that of holding prices to reasonable levels, consistent with a fair profit margin, in the face of continually rising costs of operation." The Du Pont Company," he added, "attempts to fix its sales prices at levels in line with the company's responsibilities to the consuming public, to the stockholders and to the employees."

Profits Related To Investment

Mr. Carpenter took issue with "misleading statements," which, he said, are made frequently and "pretend to measure profits, either with respect to industry as a whole or to some industrial company in particular, simply by stating the total amount of profits in dollars, or, in some instances, by specifying the per cent profit on sales.

"Such statements," he said, "can be, and in many instances are, entirely misleading because the profits are not shown in relation to the amount of investment employed in their production. To present a true economic picture of the results obtained, the per cent return on the investment employed should be shown."

Du Pont earnings in 1947, he showed, were \$75,600,000 greater than the average for the years 1928-1929, but the additional investment necessary to produce the additional earnings was \$778,700,000, so that the return on the whole investment was "actually slightly less than in the earlier period."

Continued on next page

Investment Per Employee Up

Du Pont's average investment in plants, tools and working capital per employee over this period rose from \$8,146 in 1928-29 to \$13,526 in 1947, or 66 per cent, the report revealed.

The report advised stockholders that the company would resist "to the fullest extent" the charges which form the basis of a recent suit filed by the Department of Justice against Du Pont in the field of cellophane.

Although cellophane patents and processes originated with a French concern, it was explained that Du Pont subsequently developed a moisture-proof variety which greatly extended the usefulness of the material. Patents giving the company exclusive rights to manufacture, use and sell the moisture-proof product were granted. Despite this, the company elected to license another firm operating in the field to make and sell moisture-proof cellophane in competition with Du Pont, the report said.

21 Cellophane Price Cuts

Since the introduction of cellophane by Du Pont, twenty-one reductions in price have been made, reducing the price to the buyer from \$2.65 a pound to \$.33 for plain cellophane and from \$1.60 to \$.41 a pound for moisture-proof. Cost increases recently have necessitated adjustments to \$.42 for the plain, and \$.44 for the moisture-proof which now accounts for most of the cellophane production.

Du Pont, Mr. Carpenter said, has always believed that in developing new and useful products and encouraging their use by continuously reducing costs to the public, it has been "pursuing a course not only in the interests of its stockholders but has also been serving the public interest as well."

"The initial producer of a new product," the Du Pont official noted, "is of necessity, for a period at least, the sole producer of that product. If that new producer pursues an aggressive policy of development and research and manufacture and is thereby able to make his product available to the public at ever-lower prices, it is quite probable that for a period of years he will continue as the producer of more than a majority of the product, as was the case in cellophane."

Threat To Public Interest Seen

"If the Department of Justice is able to sustain the theory that such a practice is in violation of the public's interest, it may well be that the Du Pont Company, as well as other companies, may have to reconsider their time-honored policy of making new and better products available to the public at lower prices. The company would regard such a change as being an unfortunate one and contrary to the spirit of growth and development of enterprise over the years. It is the intention of the company's management to resist the Department of Justice in this position to the fullest extent."

Continued on next page

Expenditures of \$115,600,000 were made during the year for additional plant capacities and for renewal and betterment of equipment and facilities, the report said.

Added capacity provided was principally for production of nylon products and materials entering into their manufacture, acrylic resins for plastic molding compositions, acetate rayon yarn, cellophane, synthetic methanol, ethylene glycol for anti-freeze, polythene plastic, pigments, sulfuric acid, nitrocellulose for lacquers, photographic film and coated fabrics, and synthetic detergents for textile and other purposes.

Plant Costs Doubled

The actual cost of new plants erected and equipped today, the report said, are more than double those of 1939. Provision for excess construction costs was made by setting aside \$20,900,000 from 1947 earnings as a reserve "in anticipation of an eventual reduction" in overall construction costs. This reserve, the report said, is regarded as a "penalty incurred by the company in order to serve its customers, and secure earnings from the new capacities earlier than would have been the case had the projects been deferred."

Relationships between employees and management were described as "mutually cooperative and harmonious." No strikes occurred in any of the company's manufacturing operations. Upward wage and salary adjustments were made during the year. The payroll amounted to \$261,900,000, a new peacetime high.

\$27,299,000 for Benefit Plans

Cost of company industrial relations plans, such as disability benefits, life insurance, pensions and vacations, was \$27,299,000. Including payments made under Federal and State statutes covering Social Security and workmen's compensation, the total of such expense to the company was \$32,987,000. These figures do not include extra compensation provided for employees under the company's bonus plan.

At the end of the year, there were 73,963 holders of Du Pont common stock and 23,172 holders of preferred shares. Eliminating duplications, the number of different stockholders was 91,201, as compared with a total of 87,619 at the close of 1946. An analysis of stockholders indicates, the report said, that "if the count of the number of persons having a beneficial interest" in the company's dividends is extended to estates, trusts, brokers, banks and other companies (excluding charitable organizations, educational institutions and insurance companies), the number would be at least 385,000 persons.

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WEED-CONTROL RESEARCH ASSUMES PROPORTIONS OF NEW SCIENCE

As the field of weed research broadens, it assumes the proportions of a new science, consisting of investigation of weeds, their life cycles, their habits, and their control, according to Prof. Noel S. Hanson, assistant agronomist, University of Nebraska. He recently told the North Central Weed Control Conference, of which he is president, that a new and broad field of research and education has been opened which will require hundreds of trained men.

"For every question thus far answered completely, hundreds are still unanswered," Professor Hanson said. "We know little yet for sure of the effect of the newer herbicides on soils, and on the micro-organisms in those soils which must support our agriculture for centuries to come."

"With the whole agricultural chemical industry descending on the farms of the world with new methods, and with new practices combined with the older ones, the farmer finds himself in the midst of a scientific field for which he has little or no training -- but in which he is vitally interested. Adult education is of great importance. These new methods should also go into the school and college curricula as rapidly as they are established and proven."

"A vitally interested public is clamoring for information not only about herbicides, but about insecticides, fungicides, and fertilizers."

WEED-CONTROL CONFERENCE TOLD ABOUT USE OF HERBICIDES

The best combined opinion of leading agronomists, weed-control experts, and other specialists in crop production on the value of different herbicides for different plants and conditions was included in a tentative report to the North Central Weed-Control Conference in Topeka recently. This report was presented by Dr. C. J. Willard, agronomist at Ohio State University, as chairman of the Conference's Policy Committee.

Dr. Willard's report emphasized that "Effectiveness depends on so many factors which vary so greatly from region to region that this report can in no way replace state and local recommendations." These local recommendations are now available to growers through county agricultural agents, teachers of vocational agriculture in high schools, and other county, state, and regional agricultural workers.

Policy Committee Offers Tentative Recommendations

Among the herbicides mentioned in the Policy Committee report was ammonium sulfamate, the active ingredient in Du Pont's "Ammate" Weed Killer, which the committee said "is recommended for quick elimination of woody shrubs, particularly the shrubby form of poison ivy; and for killing tree stumps and eliminating sprouts."

The committee's comments included tentative recommendations for a number of chemicals for specific weed-killing purposes, including the use of 2,4-D weed killer to control broad-leaved weeds in lawns other than bent grass; and numerous weeds in a variety of crops including perennial grasses, wheat and other small grains.

The question of proper use of 2,4-D to control weeds in corn was discussed at length. Reports were presented from areas where the chemical herbicide was used with good results under exceptionally favorable conditions. Other reports indicated various degrees of injury to the corn resulted, with reduced acre yields. Because of these conflicts, the Policy Committee made the following statement:

Use of pre-emergence sprays on weeds in corn -- "Pre-emergence treatment is a promising control for annual weeds, but is still in the testing stage. Results from different areas are conflicting, and until the factors involved are better understood, no general recommendations can be made."

Use of post-emergence sprays on weeds in corn and sorghum -- "At the most susceptible stages of growth, $\frac{1}{4}$ pound acid per acre in the form of salts or $\frac{1}{4}$ pound in ester form is the maximum safe dosage for most varieties of corn and sorghum. Where weed conditions require it, higher dosages may be used, but some reduction in yield may result."

Continued on next page

Dusting Compared With Spraying -- No Ill Effects To Livestock Expected

The committee pointed out that recognized drawbacks to dusting, as compared to spraying, are "poor coverage, poor penetration of dense foliage, and likelihood of drift." It added that 2,4-D application as airplane sprays gives performance substantially equal to ground-machine application, but "is discouraged in areas where drift to susceptible crops is possible." It added:

"Extensive trials have demonstrated clearly that no ill effects to livestock are to be anticipated from any of the present commercial forms of 2,4-D, even at rates considerably higher than those recommended for weed killing."

Research Committee Urges Revisions and Clarification of Recommendations

The report of the Research Committee, representing the work of 80 investigators in 24 states and six Canadian provinces and covering 225 experiments in 1946 and 1947, was made by F. L. Timmons of the U. S. Department of Agriculture's experiment station at Fort Hays, Kansas. This report pointed out that a study of the abstracts submitted by 13 subcommittees assigned to different phases of weed-control research "indicates clearly the necessity of revising the recommended dosages for the control of annual weeds in crops, and a clarification of the time and safe treatment in the case of noxious perennial weeds where the higher dosages are necessary." It added:

"The Research and Policy Committees must recognize that the use of 2,4-D in growing crops is no longer an experimental thing, and that it is being used upon thousands of acres of growing crops. Excessive dosages can mean extensive losses in crop yields....it is fortunate that downward revision of dosages is possible; reports from many sources indicate that much lower dosages will effectively control most of the serious annual weeds."

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NEW AGRICULTURAL PRODUCT DEVELOPMENT SECTION

Creation of an Agricultural Product Development Section is announced by Du Pont. Charged with the development of new agricultural chemicals, the section is a part of the Grasselli Chemicals Department, which manufactures a wide variety of chemical products, including plant hormones and compounds for controlling insects, fungi, weeds, rats, and other pests. Bertel C. Nylen, a chemist of wide experience in several fields, was appointed manager of the new group. C. J. Krister was named general marketing and field development supervisor for the new Section, which will handle only new products. The regular line of established agricultural products will continue to be handled through the Agricultural Chemicals Section.

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CANADIAN WEED CONFERENCE URGES MORE RESEARCH WITH 2,4-D

The economic importance of weed control and the need for more research with chemical herbicides such as 2,4-D were emphasized in discussions and in resolutions passed by the First Western Canadian Weed Conference at Regina, Sask., recently.

Delegates were told by Henry Wood, chairman of the Manitoba Weeds Commission and chairman of the Conference, that about half a million acres of grain were treated with 2,4-D on the Canadian prairies in 1947. He said weeds were second only to moisture as the limiting factor in crop yield in Western Canada.

More Studies In Basic Physiological Aspects Needed

One resolution recommended that Canada's National Research Council be requested to support and conduct research into 2,4-D. Universities and Science divisions were urged to intensify their research in the basic physiological aspects in the use of 2,4-D and allied chemicals. It pointed out that since many of the "apparent inconsistencies" in the results from this chemical appeared to be of a physiological nature on which little information is available, it was felt that greater research is needed.

Another resolution recommended that sufficient incentive should be offered to attract and retain the highest trained personnel in this field.

Commercial Groups Praised In Resolution

Praise for commercial companies which have identified themselves with the continued research and development of 2,4-D was contained in another resolution. It was pointed out that much valuable information on the control of weeds had arisen from the research on the prairies financed from grants of and in cooperation with commercial concerns.

U. S. D. A. LAUNCHES NEW PROJECT DESIGNED TO DEVELOP
"METHODS, MATERIALS, AND EQUIPMENT" FOR WEED CONTROL

More effective means of controlling weeds, which the U. S. Department of Agriculture estimates increase costs of crop production three billion dollars annually in this country, will be studied in one of the projects recently approved under the Research and Marketing Act of 1946.

The study is designed to develop practical methods, materials, and equipment for weed control, according to a Department spokesman. Basic research on herbicides, such as 2,4-D, and their effects on plants will be conducted at Beltsville, Md., by scientists of the Bureau of Plant Industry, Soils, and Agricultural Engineering. The statement adds:

"The recent discovery of these new and more effective herbicides has sharply altered the picture of weed control."

Included in the new project will be research on major weed problems of the country, organized on a regional basis in cooperation with the state agricultural experiment stations. It will be possible to initiate studies on weeds of major importance in areas where this has not been done extensively.

The agricultural engineering phases include work on the development of mechanical cultivating, spraying, flaming, and electrical equipment and improved devices for the application of herbicides. It will be centered at Ames, Iowa, and Stoneville, Miss. Agronomic, ecological, and mechanical investigations will first be undertaken on the major weeds of each region, and the results will be made available to all cooperators.

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IMPROVED EQUIPMENT TO APPLY INSECTICIDES AND FUNGICIDES TO BE SOUGHT

In recent years several new and better insecticides and fungicides have been developed through research which, in turn, has intensified the need for improved equipment and suitable formulations for applying these materials to control insects and plant diseases. In an effort to meet this need, a research project has been approved under the Research and Marketing Act of 1946, says the U. S. Department of Agriculture. It adds:

"The work will be carried on cooperatively by the Bureau of Plant Industry, Soils, and Agricultural Engineering, the Bureau of Entomology and Plant Quarantine, and the Agricultural Experiment Stations of Idaho, Oregon, Washington, and other stations as warranted.

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"Approximately 500 million pounds of insecticides and fungicides are now used annually for agricultural and other purposes. Radically different types of equipment are required to apply them depending on the kind of insect or disease to be combated and the crops, livestock, buildings, and numerous other factors that might be involved. There is an urgent need, Department specialists say, for attachments better suited for use on fixed-wing airplanes, helicopters, and for ground equipment to facilitate more rapid and effective coverage.

"Plans are to initiate these studies in northwestern Oregon where emphasis will be on the development of airplane equipment and satisfactory insecticide formulations to control insects on peas."

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NEW LEAFLETS TELL HOW TO USE DU PONT'S AGRICULTURAL CHEMICALS

The Du Pont Company is continually issuing new booklets and leaflets on its numerous agricultural chemicals. For instance, during recent weeks a new leaflet has been published on "Ammate" Weed Killer, to be used "for the safe, effective, non-selective control of hard-to-kill weeds," such as poison ivy, wild rose, wild cherry, raspberry, wild blackberry, and similar woody weed plants.

Still another new leaflet deals with the subject of "How to Control Pests" with "Deenate" DDT insecticides on "Livestock and in Farm Buildings." It gives a table of host animals and buildings, insects to be controlled, treatment, and time to apply, as well as other valuable information. A new leaflet on "Marlate" methoxychlor insecticide for use on vegetables, fruit, and livestock is also available.

Another new leaflet tells how to "Get Rid of Internal Parasites to Turn Feed Into More Meat." Pointing out that never before has one drug proved so effective for worms in so many kinds of animals, the leaflet gives specific directions for use of phenothiazine for sheep, goats, cattle, hogs, poultry, and horses, in the feed, in salt, as a drench, and in a bolus, capsule, or pellet.

Another leaflet announces "Ceresan" M seed disinfectant for treating wheat, oats, barley, rye, peas, sorghums, cotton, sugar beets, and flax, and how it can be used as a dust or as a slurry. Other new leaflets cover "Arasan," "Arasan" SF, and "Tersan" fungicides.

Copies are available upon request to the Grasselli Chemicals Department, Du Pont Company, Wilmington 98, Delaware.

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: FARMERS CAN PRESERVE NEWLY CUT FENCE POSTS BY TREATING :
: WITH CHROMATED ZINC CHLORIDE WITH LITTLE LABOR OR EXPENSE :
:

: American farmers replace approximately half a billion fence :
: posts annually, an expense that chemical treatment can help reduce :
: sharply, according to the U.S. Department of Agriculture. :
:

: The problem of the farmer has been primarily one of discovering :
: ways to treat freshly cut posts effectively and economically on :
: his own farm. Obviously, any method requiring expensive equipment :
: is undesirable. :
:

: Du Pont chemists say it is possible to treat posts with chromated :
: zinc chloride using only a pail and a used tire tube. This is :
: called the "tire tube" method. Another, and even simpler one, is :
: the "trough" method. :
:

: "The fast-growing, non-durable species of timber which must be :
: frequently thinned out of woodlands provide excellent posts," they :
: explain. "When properly treated, they will outlast several instal- :
: lations of species ordinarily considered naturally durable." :
:

TREATING WITH CHROMATED ZINC CHLORIDE REQUIRES NO ELABORATE EQUIPMENT

Newly cut, thoroughly green wooden fence posts that ordinarily last only two or three years will last ten to fifteen years or longer when preserved with chromated zinc chloride. This form of treatment not only adds long service and freedom from early decay, but the treated posts are termite repellent, clean, odorless, paintable, and safe to handle. The chemical too is fire retardant.

One of the easiest ways of treating is called the "tire tube" method, developed by the U.S. Department of Agriculture, Forest Products Laboratory, Madison, Wisconsin. Many farmers use the "trough" method, developed at the Clemson, S.C., Agricultural Experiment Station.

Chemical Available In Convenient Packages for Farm Use

"By these simple, inexpensive methods farmers can effectively treat their freshly cut fence posts at home," according to the Grasselli Chemicals Department, manufacturers of Du Pont "CZC" chromated zinc chloride, available in convenient 50-pound pails for farm use.

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"Tire Tube" Method

All that is necessary is for the farmer to rack the posts slantwise on end, place a section of old tire tube over the butt end, wire it tightly with pliers to prevent leakage, and pour into the tube a sufficient amount of the preservative chemical dissolved in water in the proportion of about 1 pound per gallon of water. It takes about one-fourth gallon of solution for a six-foot post three inches in diameter (inside bark), one gallon for five inches, and two gallons for 7½ inches. The amounts are increased or decreased proportionally for longer or shorter posts.

"Impregnation is accomplished by displacing the moisture and sap present in the wood with chromated zinc chloride solution," Du Pont chemists explain. "The pressure exerted by the 'head' of solution in the tire tube is sufficient to accomplish this. The length of time required is influenced by the treatability of the wood and the dimensions involved, but ultimately the preservative chemical will seep through the entire length of the post."

Bark Should Not Be Removed Before Treating

"The bark must not be removed before treating, nor should split posts be used," they add. "If seasoning has already progressed sufficiently to bring about a crystallization of the gums and resins in the wood they will interfere with the free movement of treating solution endwise through the posts. Under such conditions complete or satisfactory penetration may be difficult to obtain. Freezing imposes the same obstacle, consequently this method should not be practiced during cold weather."

"Trough" Method

The "trough" method eliminates the need for using rubber tire tubes. It impregnates the green wood with the chemical by a simple soaking process. It requires only a wooden trough or half a barrel. The top ends of ten or twelve newly cut and thoroughly green posts are immersed in the solution for three hours. A one-inch disk is sawed off of each post to remove any resinous material from the lower end which is then placed in the solution for 24 to 48 hours, or until the solution is absorbed. The posts are then removed and stacked on their top ends for two to four weeks, until thoroughly seasoned. This treatment is best when the sap flows most; that is, during spring and summer, especially on bright, sunny days. Evergreen trees may be treated, but less effectively, in winter when temperature is above freezing. Full information on this procedure is contained in the U. S. Department of Agriculture Leaflet AIS-36-1946, which can be obtained by writing the Department at Washington 25, D. C.

NOTE: For complete instructions on preparation of fence posts, preparation of solution, quantity of solution needed for various post diameters, and procedure for treating posts, write the Grasselli Chemicals Department, Du Pont Company, Wilmington 98, Del.

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NEW BOOKLET TELLS "THE STORY OF CELLULOSE"

The story of the manufacture of cellulose and its chemical derivatives from two products of farm and forest -- cotton and wood -- is told in a new Du Pont educational booklet called "The Story of Cellulose."

The booklet points out that ever since the human race was in its infancy, men have been dependent upon wood and cotton. They burned wood for fuel, and turned it into furniture, houses, boats, paper, and many other products.

"By distilling wood in the absence of air, they have obtained wood alcohol, charcoal, acetic acid, tar, and other constituents," it says. "They have made cotton into such products as cloth, paper, and surgical dressings."

The booklet explains that it was only in the last century that the chemist found ways to transform wood and cotton into hundreds of useful products, such as plastics, photographic films, rayon fibers, lacquers, smokeless powder, cellulose sponges, and cellophane.

"The Story of Cellulose," written primarily for students, is suitable for the general public as well. Pictures and diagrams help present the subject understandably, and a few formulas and equations are included for those who know chemistry. A copy will be sent upon request. Address: Editor, Du Pont "Agricultural News Letter," Wilmington 98, Delaware.

CHEMISTS TRANSFORM CELLULOSE INTO MANY USEFUL PRODUCTS

Cellulose, which makes up 40 to 50 per cent of wood and 90 to 97 per cent of cotton fiber, has many practical uses in addition to such natural jobs as acting as a fibrous binding material, holding growing plants erect, and protecting and dispersing certain seeds.

A new Du Pont educational booklet, "The Story of Cellulose," points out that cellulose crosses the path of the average person most frequently in forms of paper, cotton cloth, wooden furniture, and houses, and in vegetables, grains, and fruits that he eats.

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"But unless he is acquainted with the transformations which cellulose undergoes in the chemical laboratory, he would be surprised to find that this material is the basis for the shiny lacquer on his automobile, the cellophane film used to wrap many of his purchases, his wife's rayon dress, the powder in his sporting rifle, the film in his camera, and dozens of other familiar objects," the booklet says.

Cellulose Changed By Chemical Industry In Several Ways

It explains that while such products owe their existence to cellulose, it is cellulose which has been changed in one of several ways by the chemical industry.

"The large amount of cellulose used for chemical and related purposes is indicated by the fact that one American chemical company alone consumed about 51,000,000 pounds of cotton linters and 94,000,000 pounds of wood pulp in a recent year," the booklet continues.

The booklet discusses synthetic textile fibers, nitrocellulose lacquers, pyroxylin-coated fabrics, nitrocellulose plastics, cellophane, and related products.

In the discussion on nitrocellulose lacquers, the booklet says that use of such lacquers for all purposes has grown until, all told, 35 million gallons of clear and pigmented lacquers are being made in America every year.

After outlining the development of cellophane, the booklet discusses such uses as packaging foods, cigars, and cigarettes. It explains that as field after field opened up for cellophane, "its price went down until today it costs, in bulk, less than one-fifth of the original \$2.65 a pound." This was its cost in 1924 when it was still a luxury packaging material, for wrapping such glamorous articles as expensive perfumes and candies.

Scientists Working to Improve Cellulose Products

The booklet has numerous other sections of interest to the student, and concludes with the following paragraph:

"The present story of cellulose ends here. But it has not ended for research chemists, engineers, and other scientists in laboratories all over the country. They are continually working to improve the cellulose products described in this booklet, and investigating new ones. Such research will help bring more and better goods to Americans everywhere."

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GROWERS TO TREAT OAT SEED AGAINST VICTORIA BLIGHT

: Disease Caused by Sooty Mold Fungus -- Victoria blight (*Hel-*
: *minthosporium victoriae*) is caused by a fungus, commonly known
: as a sooty mold fungus. All varieties that have the Victoria
: variety in their parentage are susceptible, including Boone, Cedar,
: Control, Forvic, Fultex, Letoria, Neosho, Osage, Stanton, Tama,
: Traveler, Vicland, and Vikota.

How To Recognize Victoria Blight -- Many seeds may rot in the soil so that seedling stands are poor. Diseased seedlings are stunted. Leaves are streaked with orange or orange-brown colored stripes, especially along the margins. The roots of infected plants are rotted off; the plants are easily pulled up. Diseased plants almost invariably die. The stems of dead plants become blackened, especially at the joints, and break over. Severely infected fields of oats may lodge 100 per cent.

How the Fungus Lives From Year to Year -- The fungus that causes Victoria blight can live from year to year in the soil and on oat straw in the soil. Oats grown in infested soil may become diseased at any time between germination and maturity. Seed from a field of diseased oats also can carry the fungus over from year to year. The spores of the fungus are borne on the hulls and seed coats of the grain. These spores germinate and attack the young seedlings.

(The foregoing information is from the new
Oklahoma Experiment Station Circular C-127.)

The Oklahoma Agricultural Experiment Station, operating on the basis that to be forewarned is to be forearmed, has moved early to help prevent spread of the new Victoria blight disease to the oat fields of that state. Prompt action is being taken to stop major economic losses in Oklahoma similar to those reported from Arkansas, Florida, Indiana, Iowa, Kansas, Missouri, Texas, and other states, even though no infections have yet been reported by Oklahoma growers. The Oklahoma Station is urging use of chemically treated, Oklahoma-grown certified, cleaned seed.

Continued on next page

The Station recently issued a new Circular, No. C-127, "Victoria Blight of Oats: A Dangerous New Plant Disease," by Dr. J. Harvey McLaughlin, assistant plant pathologist, which says: "The only definitely identified case in Oklahoma in 1947 was found on the Experiment Station Farm at Stillwater, where the test plots are checked almost daily by men familiar with diseases of small grain." It adds, however, that other cases may have occurred in the state without being recognized.

Disease Potentially Dangerous To Every Oat Grower In State

The circular says: "It is known that the fungus that causes Victoria blight can multiply rapidly and cause heavy losses in only one or two year's time. This disease is potentially dangerous to every oat grower in Oklahoma."

It says the new disease was first observed in Iowa in 1945, and has since been reported from almost all oat-growing regions in the United States. It points out that Iowa reported 5% loss in 1945 and 25% in 1946 in Victoria-type oats. Kansas reported only 1% loss in 1946 and 20% to 30% loss in the eastern part of the state in 1947.

"Note how greatly the crop losses increased in only one year's time," the circular adds.

Recommends Treating Seed With New Improved "Ceresan"

In the circular, Dr. McLaughlin says treatment of oat seed with New Improved "Ceresan" seed disinfectant "helps to control Victoria blight." He adds that such chemical treatment "has long been a recommendation for control of oat smuts." He recommends use of a half ounce per bushel of seed, pointing out that even this small amount of the chemical helps control the blight "by killing the fungus spores carried on the seed." His statement continues:

"When seed of a susceptible variety is planted in infested soil, seed treatment may give only partial control. Experiments in Iowa have shown that seed treatment may increase yields in oat varieties susceptible to Victoria blight as much as 50% or more. Seed should be treated at least two days before planting, and may be treated as long as two months before planting."

So-Called Resistant Varieties Susceptible to Other Diseases

The Oklahoma plant pathologist also recommends that Oklahoma farmers plant Oklahoma-grown certified seed that has been cleaned to remove lightweight diseased kernels, weed seed, and chaff. He lists so-called resistant varieties, but warns that such varieties are susceptible to other important oat diseases, "so that new and better varieties are needed." He points out that among winter oats, Forkeddeer, Tennex, and Wintok are resistant to Victoria blight, but susceptible to crown rust. Stanton, on the other hand, is susceptible to Victoria blight, and resistant to crown rust.

Continued on next page

Du Pont Plant Pathologists Advise "Ceresan" M Also Effective

Du Pont plant pathologists say since varieties resistant to one disease are susceptible to other diseases, all seed should be chemically disinfected, regardless of variety or the area where it is to be planted. They also point out that Du Pont's new "Ceresan" M seed disinfectant, recently made available commercially, is effective against both smut and Victoria blight of oats; and will probably be preferred, where it can be obtained by growers, because it is practically odorless and greatly reduces the hazard of irritation of the skin of persons using it.

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CONSTRUCTION OF FACILITIES FOR MANUFACTURING "LEXONE" BENZENE HEXACHLORIDE INSECTICIDE STARTED AT HOUSTON

The Du Pont Company announces that construction of a unit to manufacture a new insecticide has started at the Houston, Texas, works of its Grasselli Chemicals Department.

The new insecticide -- benzene hexachloride -- has proved effective on cotton, peaches, and on certain vegetables, as well as on livestock and for the destruction of grasshoppers. The Du Pont Company has been making it in limited quantities since 1946, and has marketed it under the trade-mark "Lexone". In view of the growing demand for the new product, it was decided to build new production facilities, and Houston was selected as the site.

The Houston works of the Grasselli Chemicals Department was established in 1944 when the Du Pont Company bought the property on the Houston-Galveston canal near La Porte. It has been in production since 1946. Its principal products are "Fermate" and "Zerlate" fungicides, which are adapted especially for fruit, tobacco and some vegetables, and phenothiazine, a chemical which is effective in ridding livestock of internal parasites.

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"FERMATE"-SULFUR MIXTURE REDUCES FUNGUS SPOILAGE OF DATES

Another new use for "Fermate" fungicide has been discovered and reported in technical publications dealing with agricultural research. Mixed with sulfur, this organic fungicide, containing ferric dimethyl dithiocarbamate as the active ingredient, greatly reduces fungus spoilage of dates, and the mixture controls date mites and dried fruit beetles as well.

Tests Begun in California In 1940

Back in 1940, Dr. Donald E. Bliss, University of California plant pathologist at Riverside, tackled the growing menace of increasing infestations of date spoilage in his state. He began field-testing eleven different fungicidal chemicals and mixtures, seeking the best one to prevent or reduce the disease, which attacks in August and September of wet years. While some others showed promise, a mixture of "Fermate" and sulfur proved most effective, he says.

Controls Date Mites and Most of the Dried Fruit Beetles

Dr. Bliss found that a 5 per cent "Fermate"-sulfur dust, which he had found highly successful in limited field tests, gave protection from fungus spoilage and insect damage when used commercially. In a recent statement, he quoted one year's typical results, as follows:

"Only 11 per cent of the dates treated with the fungicide showed fungus spoilage, compared with 53 per cent spoilage in untreated dates. The mixture also controlled date mites, and only a few dried fruit beetles were found after it was applied. Residues of 'Fermate' were cut to 5 parts per million and sulfur to 12 p.p.m. by washing afterward. Fruit quality and taste were unaffected by the chemical."

The action of the mixture against the mites and beetles is important because these pests cause considerable mechanical damage to the fruit. In addition, the dried fruit beetle acts as a carrier of the disease spores that cause the spoilage.

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U. S. DEPARTMENT OF AGRICULTURE SAYS WOODS VARY IN HOLDING PAINT

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: "Among the softwoods, each annual growth ring includes summer-
: wood and springwood. The summerwood is the dense, horny, darker-
: colored part of the ring. The springwood is softer and lighter
: (in weight and color). In planed lumber, the grain of the wood is
: revealed in patterns of lighter and darker zones of wood." - U. S.
: Forest Service.
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Difference between springwood and the summerwood in a board may be the cause of paint failing to stick and protect the board, says the U. S. Department of Agriculture, in a recent publication on "Wood Properties and Paint Durability" by Dr. F. L. Browne of the U. S. Forest Service. Paint sticks firmly to both springwood and summerwood when first applied, but when it is old and brittle it comes loose from the firmer and smoother summerwood, while it is still held firmly by the springwood, he says.

"If the bands of summerwood are narrow enough," Mr. Browne says, "the coating may bridge over the summerwood and remain in place, but if the bands are wide the coating breaks loose from them."

He explains that paint does not loosen so rapidly on a north wall as on a sunny south wall, and boards with wide zones of summerwood may hold paint as long on a north wall as board with better paintholding quality does on the south wall exposed to the sun.

Bulletin Gives Suggestions For Getting Good Service from Paints

The ten pages of text and illustration in the government bulletin offer practical suggestions for getting good service from paints. It is not a manual for overcoming special difficulties in painting, but is "concerned mainly with how wood affects the behavior of coatings of good paint, well applied, and maintained under ordinary conditions of service." The bulletin includes other practical explanations and suggestions for painting hardwoods, for managing knots and other defects, for selection of woods, for avoiding trouble from moisture, and for use of correct primer coats that will improve the service of the covering coats of paint.

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